

SHORT COMMUNICATION

FOOD STORAGE BY A WANDERING GROUND SPIDER (ARANEAE, AMMOXENIDAE, *AMMOXENUS*)

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ABSTRACT. Members of genus *Ammoxenus* are known predators of harvester termites (*Hodotermes mossambicus*). An *A. amphalodes* female was observed catching and paralyzing a termite in the field. The paralyzed termite was deposited in a silk sac with other paralyzed termites. This confirms that *Ammoxenus* spp. use different methods of catching and utilizing prey. Termites are either killed and fed upon or paralyzed and stored for feeding at a later time.

Keywords: Termites, Africa feeding behavior

Ammoxenus Simon 1892 are known predators of the harvester termite, *Hodotermes mossambicus* (Hagen 1858) in southern Africa (Wilson & Clark 1977; Van den Berg & Dippenaar-Schoeman 1991; Dippenaar-Schoeman et al. 1996a, b). Harvester termites forage in sporadic bursts of activity on the soil surface from subterranean nests. When present in high numbers they can cause severe damage to grassland, especially during long periods of drought. Ammoxenid spiders are free-living soil-dwellers, also known as sand divers due to their ability to dive headfirst into sand when disturbed. *Ammoxenus* are known only from southern Africa, with six described species occurring throughout the region (Dippenaar & Meyer 1980). They are commonly found in high numbers in areas infested with harvester termites.

Ammoxenus are regarded as specialist predators of harvester termites (Dippenaar-Schoeman et al. 1996b). They are invariably found in the soft soil mounds left after excavation by the termites in close proximity to the nest entrance. They are able to detect termite foraging activity either through soil vibration or chemical cues. According to Dean (1988) the spiders use tactile cues to select optimal prey items after initial handling of the prey. During prey capture, the termite is grabbed and bitten between the head capsule and the cephalothorax. The dead termite is pulled below the soil surface by the spider before feeding commences. Prey is sucked out and not chewed. Van den Berg & Dippenaar-Schoeman (1991) observed that members of *Ammoxenus amphalodes* Dippenaar & Meyer 1988 spend inactive periods in sac-like retreats made in

the soft soil mounds left by the termites during excavations of their subterranean nests. Along with the retreat sacs, other soft silk sacs containing dead harvester termites (4–8 termites per sac) were collected from the soil mounds at Rietondale Research Station, Pretoria (25°14'S, 28° 15'E). Van den Berg & Dippenaar-Schoeman (1991) speculated that these termites might serve as a food reserve for the spiders during the long periods when the termites are inactive. The observations described here confirm this.

On 21 April 1998 an *A. amphalodes* female was observed in a grassy field near Pietersburg (23°54'S, 29°28'E) in the Limpopo Province of South Africa. She ran with great speed amongst workers of the harvester termite and then suddenly ran towards a termite worker, leaped onto it and delivered a bite to the side of the termite's body just above the base of the second leg. The spider flexed her legs backward while administering the bite. Within 30 sec the struggling termite slowed down. The spider released the termite for less than a sec to administer a second bite to one of the legs of the termite that lasted about 20 sec. The spider then dragged the still-living, but paralyzed, termite about 40 cm to a soft sandy area. She entered a soft sac-like structure on the soil surface that was well camouflaged with sand particles. The form of the sac, with its flap-like entrance, was similar to that of a sleeping bag lying flat on the soil surface. The spider used her front legs to open the sac and dragged the termite into the sac. Movement within the sac continued for about 5 min.

At this stage the sac with its contents was col-

lected along with the female spider. The sac contained four termites which appeared dead but, when touched, movement of their legs was observed. There was no indication that they had been fed upon. The sac was about 10 cm in diameter and the interior consisted of a white, slightly shiny smooth silk layer while the outside was slightly sticky and covered with sand particles. The spiders and termites are voucher specimens housed in the National Collection of Arachnida at the ARC-Plant Protection Research Institute in Pretoria.

Harvester termites have erratic bursts of activity. The ammxenids are able to detect these bursts whether they occur nocturnally or diurnally (Wilson & Clark 1977; Dippenaar-Schoeman et al. 1996a, b). The termites are thus available sporadically, for short periods, above ground to the spiders. Web building spiders have been observed storing termite prey during at least short periods when food is abundant. The theridiid *Chrosiothes tonala* Levi 1954, which is also a termite specialist, could capture during a single burst of termite activity 20 prey or more before carrying them all off in one prey mass (Eberhard 1991). In the field these spiders were observed feeding on the prey mass for up to a day. The extra prey captured therefore enabled the spiders to feed over a longer period.

This observation of food storage strengthens the assumption that members of *Ammoxenus* are specialist predators of termites (Dippenaar-Schoeman et al. 1996b). They seem to use two different methods of catching and utilizing prey. The termite workers are either killed, pulled immediately below the soil surface and fed upon or they are paralyzed and stored in silk sacs just below the soil surface for feeding at a later stage.

LITERATURE CITED

- Dean, W.R.J. 1988. Spider predation on termites (Hodotermitidae). *Journal of the Entomological Society of Southern Africa* 51:147–148.
- Dippenaar, A.S. & M.K.P. Meyer. 1980. On the species of the African genus *Ammoxenus* (Araneae: Ammxenidae), with descriptions of two new species. *Journal of the Entomological Society of Southern Africa* 43:41–49.
- Dippenaar-Schoeman, A.S., M. de Jager & A. van den Berg. 1996a. Behaviour and biology of two species of termite-eating spiders, *Ammoxenus amphalodes* and *A. pentheri* (Araneae: Ammxenidae), in South Africa. *African Plant Protection* 2:15–17.
- Dippenaar-Schoeman, A.S., M. de Jager & A. van den Berg. 1996b. *Ammoxenus* species (Araneae: Ammxenidae) specialist predators of harvester termites in South Africa. *African Plant Protection* 2:103–109.
- Eberhard, W.G. 1991. *Chrosiothes tonala* (Araneae, Theridiidae): A web-building spider specializing on termites. *Psyche* 98:7–19.
- Van den Berg, A. & A.S. Dippenaar-Schoeman. 1991. Ground-living spiders from an area where the harvester termite *Hodotermes mossambicus* occurs in South Africa. *Phytophylactica* 23:247–253.
- Wilson, D.S. & A.B. Clark. 1977. Above ground predator defense in the harvester termite, *Hodotermes mossambicus* (Hagen). *Journal of the Entomological Society of Southern Africa* 40:271–282.

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